EU OPEN DATA DAYS

Sam Hawkins

Data programme director, Ember

Open data for a clean, flexible power system

19 – 20 MARCH 2025

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Data Programme Director

EMBER

Outline

- Introduction to Ember
- Context of the European energy transition
- Successes and challenges
- Recommendations

Who we are

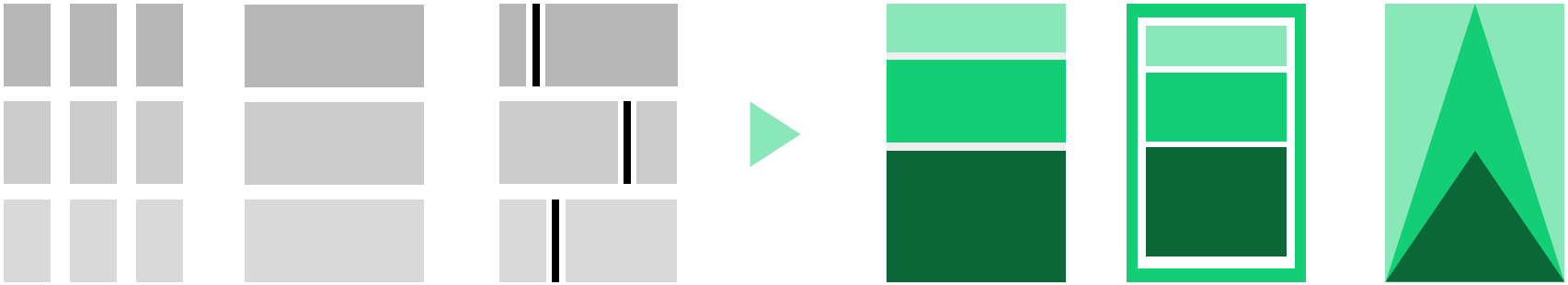
5 years

20 Countries

65 people

6 Teams: Europe, Asia, Global, Coal-mine methane, Data & Comms

We turn data into action.



Gather **Curate** **Analyse**

Change policy

Shift narratives

Empower campaigns

Key statistics on Ember’s data

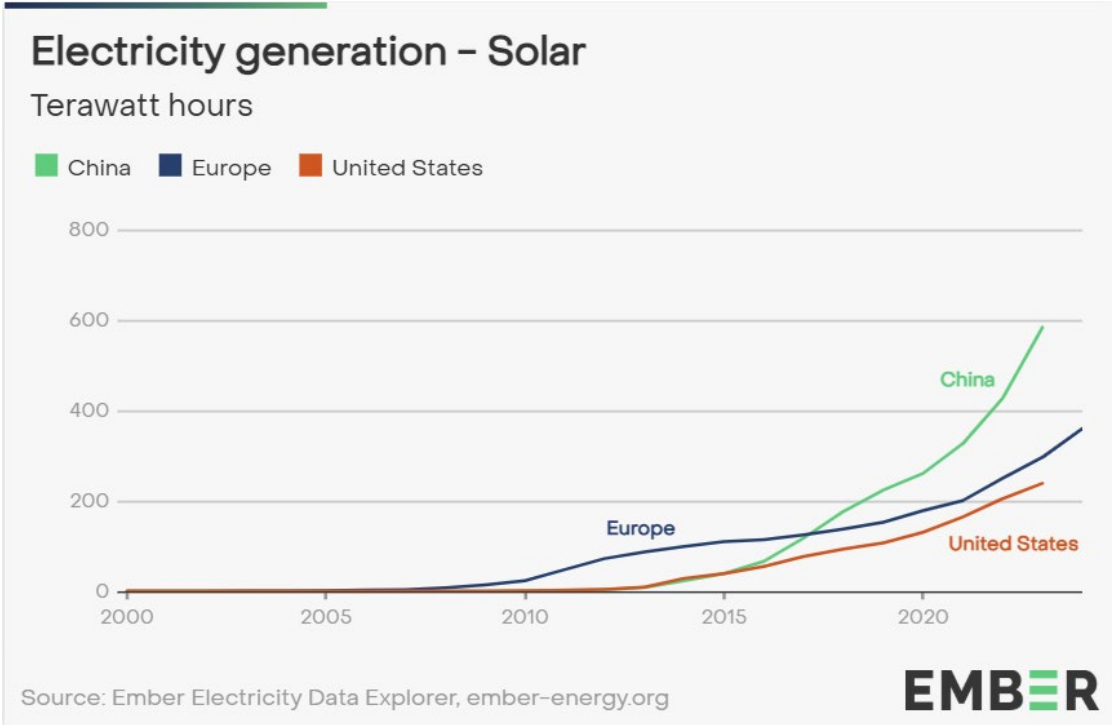
97 countries and regions with monthly data

228 countries and regions with annual data

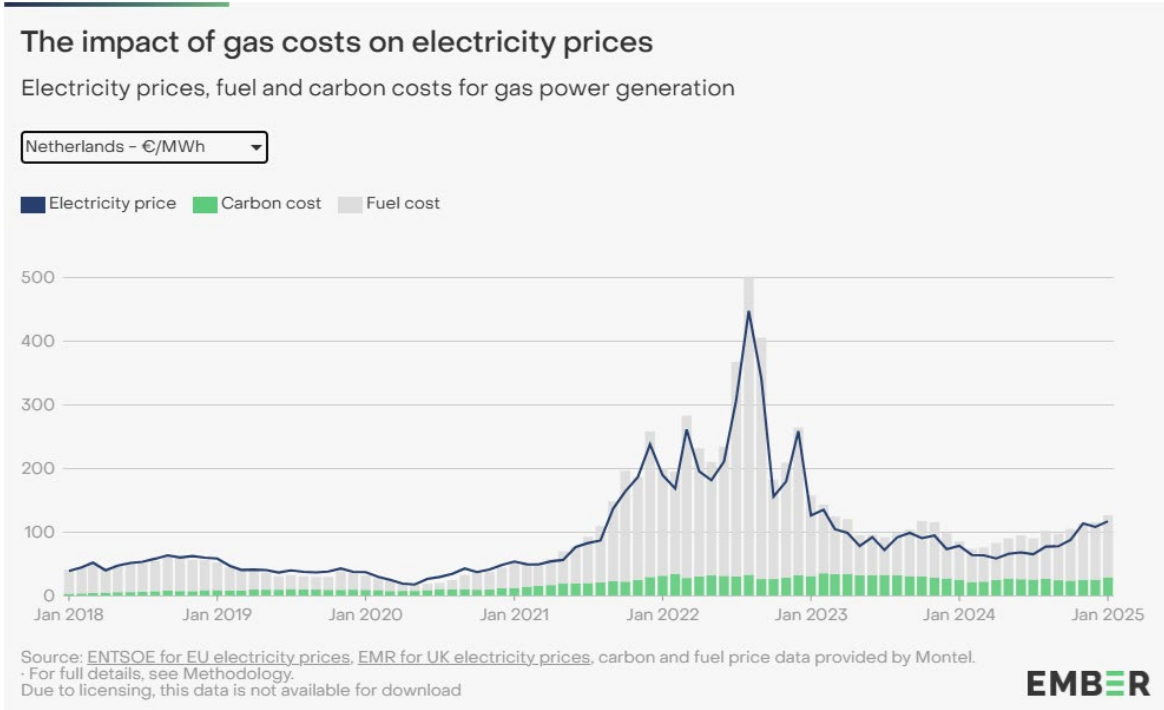
31,440 data downloads

394,976 page views

Data explorer



Data tools


The impact of gas costs on electricity prices
Electricity prices, fuel and carbon costs for gas power generation
Netherlands - €/MWh
Electricity price
Carbon cost
Fuel cost
500
400
300
200
100
0
Jan 2018
Jan 2019
Jan 2020
Jan 2021
Jan 2022
Jan 2023
Jan 2024
Jan 2025
Source: ENTSOE for EU electricity prices, EMR for UK electricity prices, carbon and fuel price data provided by Montel.
· For full details, see Methodology.
Due to licensing, this data is not available for download
EMBER

Who uses our data

Ember's groundbreaking open data not only establishes new benchmarks for quality but also remains a consistent go-to resource for a diverse array of partners, informing and enriching their work.

Data platforms

Our World in Data

statista

Government departments

Office for Budget Responsibility

Media agencies

CNN

The New York Times

NIKKEI

Bloomberg

BBC

REUTERS

FT FINANCIAL TIMES

South China Morning Post

THE WALL STREET JOURNAL.

The Washington Post

澎湃

CarbonBrief CLEAR ON CLIMATE

THE TIMES OF INDIA

Eco-Business

Other like-minded organisations

WORLD ECONOMIC FORUM

iea

THE WORLD BANK

CREA

RMI

UNFCCC

Tara

Institute for Energy Economics and Financial Analysis IEEFA.org

Agora Energiewende

TransitionZero

Data and political influencers

Michael Liebreich, Adam Tooze, Kyle Chan, Michael Bloss, Jack McCaslin - US Department of State, Ed Milliband MP, Putra Adhiguna and Jan Rosenow (top LinkedIn voices), Nikos Tsafos (Chief Energy Advisor to Greece's Prime Minister), Jutta Paulus, a Green MEP.

Why

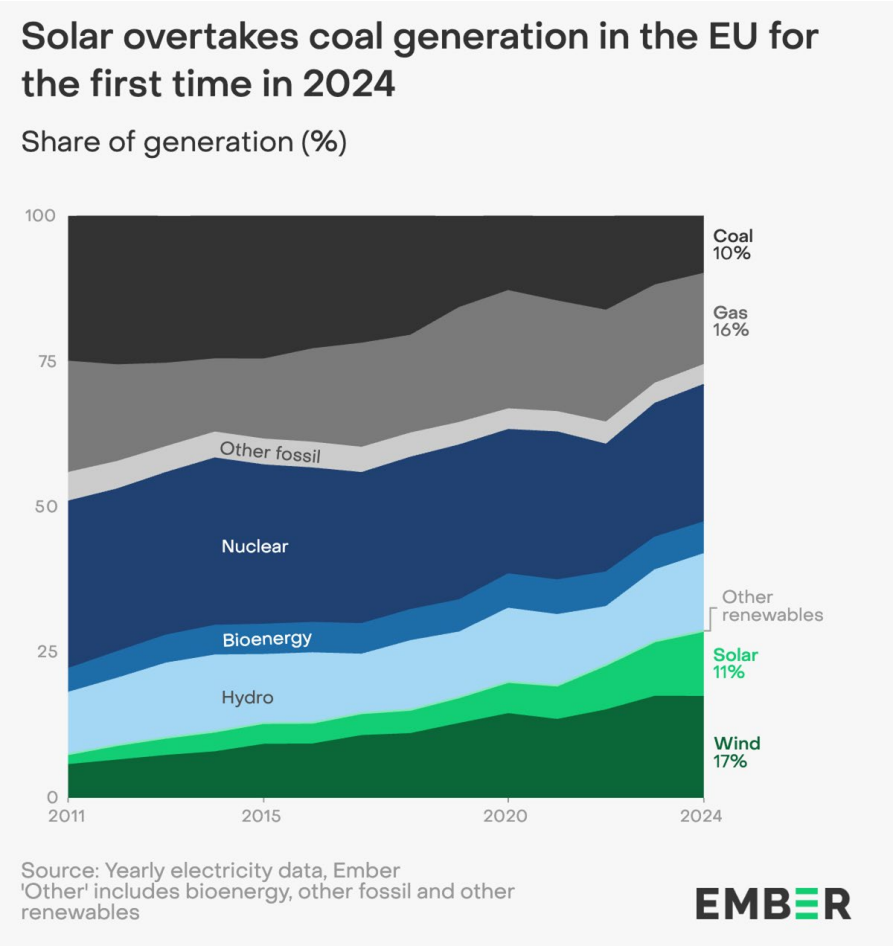
- Open data should be the basis for policy-making
  - Making data open democratises it
  - Transparency increases credibility
  - Helps build trust & participation in politics

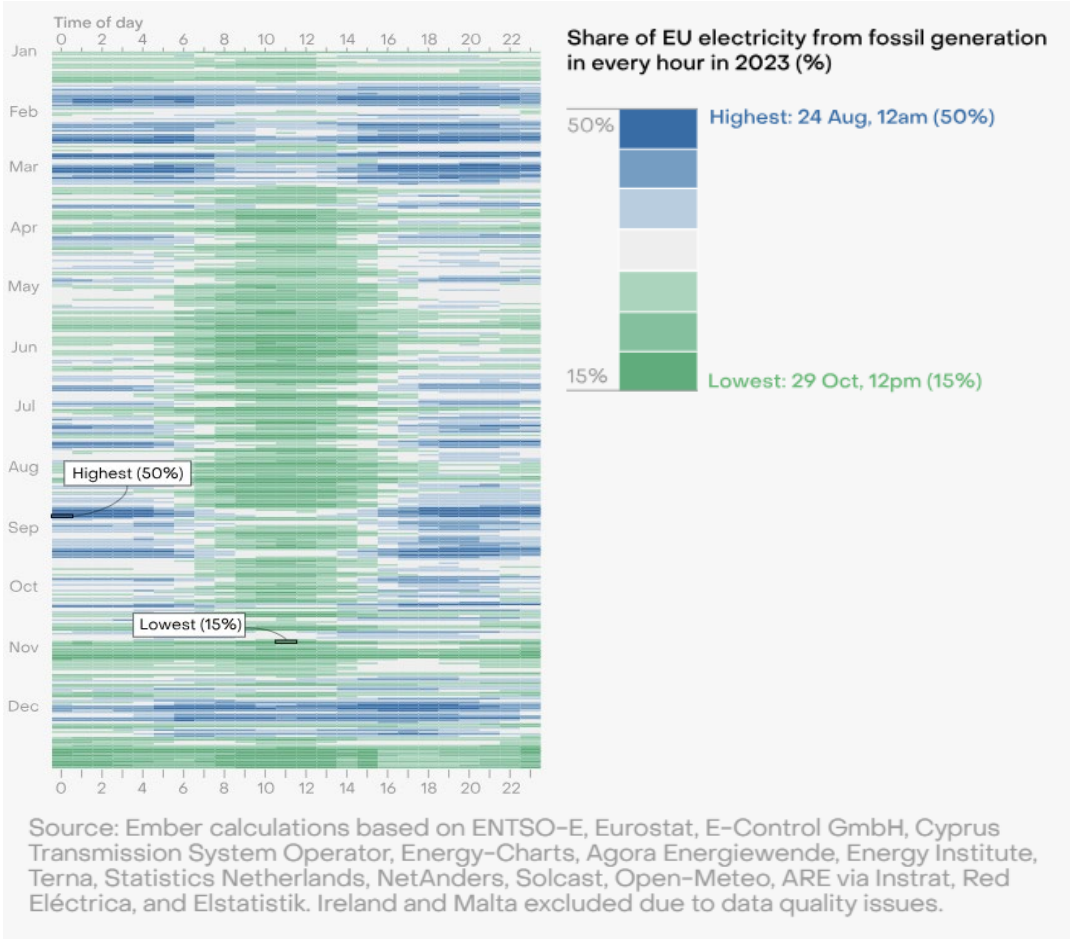
- Economic opportunities
  - Disruptive business models
  - Incentivise correct investment

- System operation!

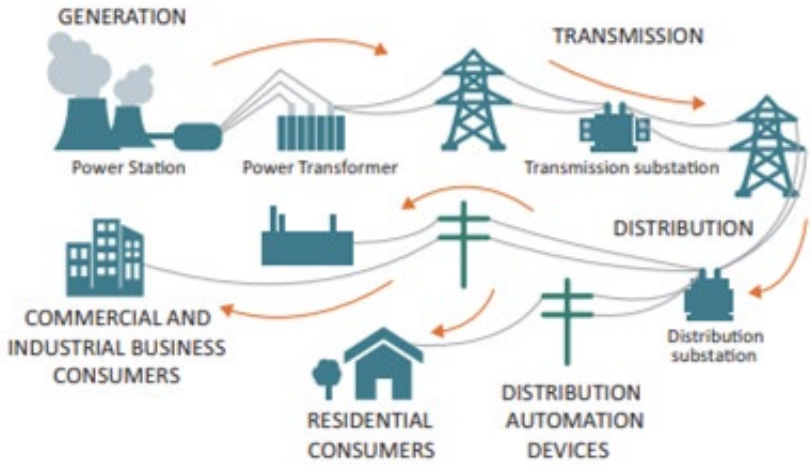
EU Energy Transition

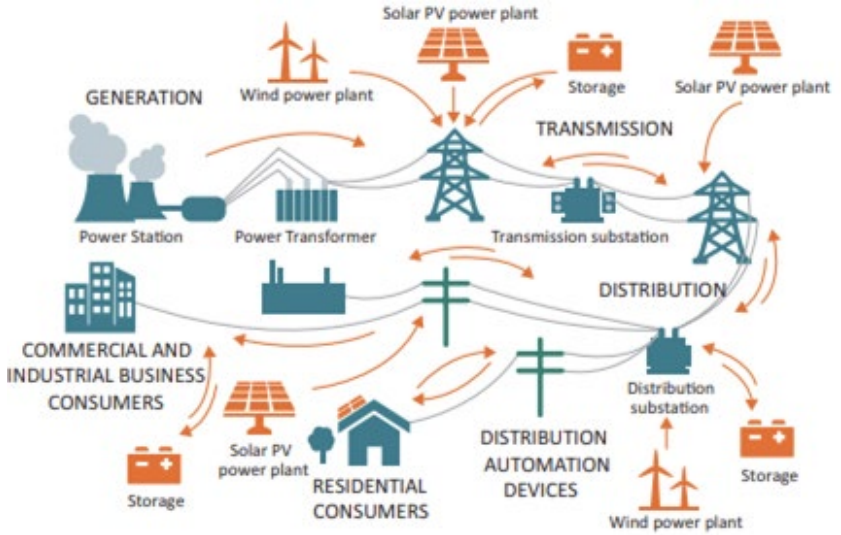
Renewables provided nearly half (47%) of EU power, up from a third in 2019




Time of day
0 2 4 6 8 10 12 14 16 18 20 22
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Highest (50%)
Lowest (15%)
Share of EU electricity from fossil generation in every hour in 2023 (%)
50%
Highest: 24 Aug, 12am (50%)
15%
Lowest: 29 Oct, 12pm (15%)
Source: Ember calculations based on ENTSO-E, Eurostat, E-Control GmbH, Cyprus Transmission System Operator, Energy-Charts, Agora Energiewende, Energy Institute, Terna, Statistics Netherlands, NetAnders, Solcast, Open-Meteo, ARE via Instrat, Red Eléctrica, and Elstatistik. Ireland and Malta excluded due to data quality issues.

Energy transition is well underway

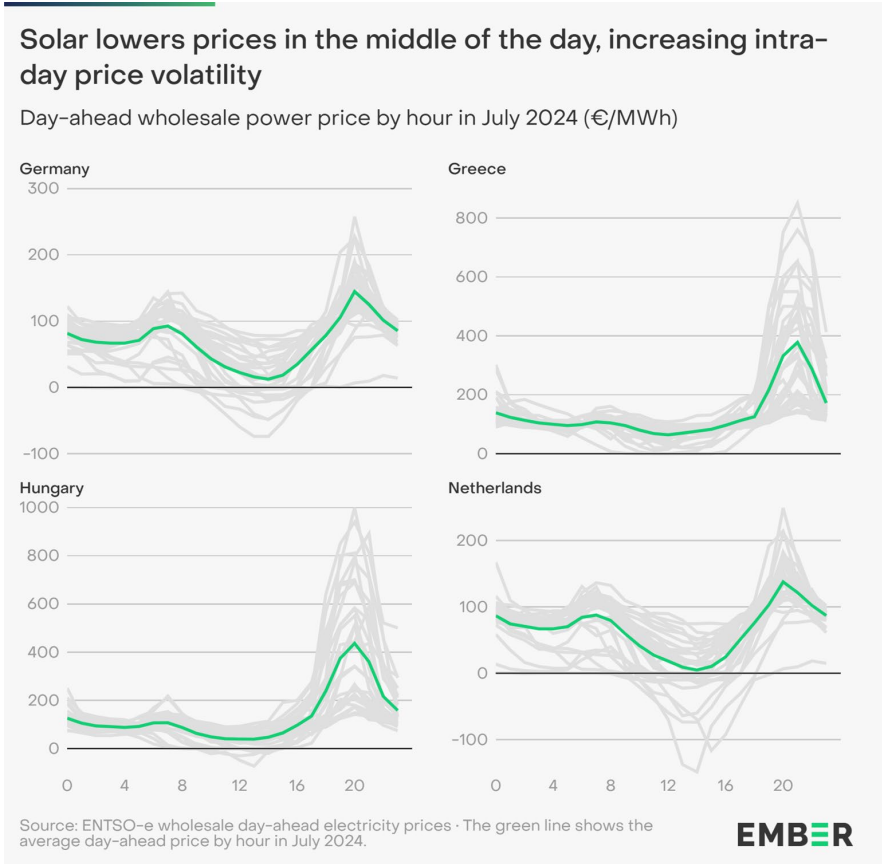




Needs and opportunities

There is both urgent need and also a big opportunity for

- Grids
- Clean flexibility
- Storage
- Data



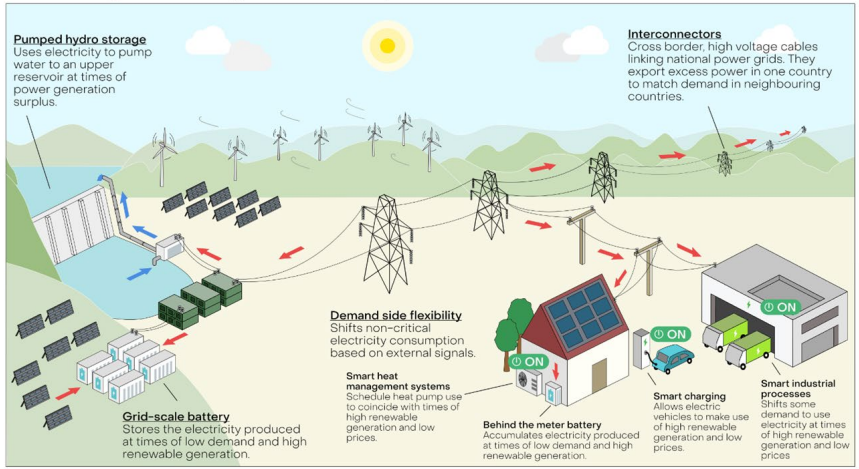
Clean flexibility

What do we mean by clean flexibility?

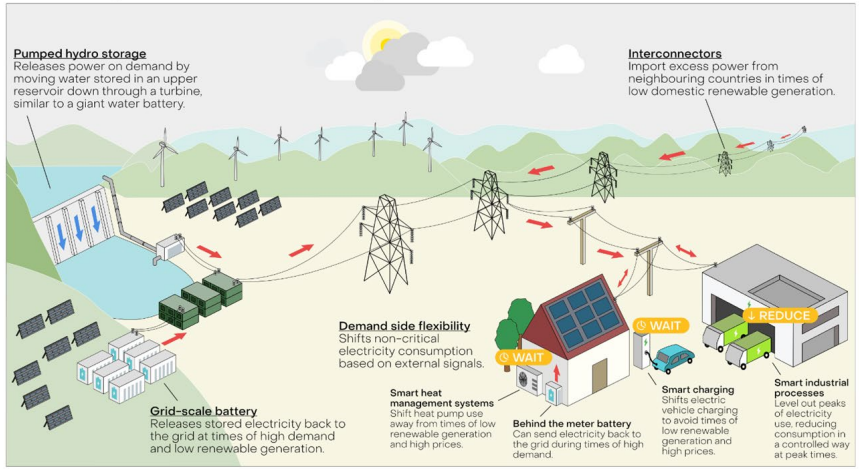
A suite of solutions that balance the grid when weather-dependent generation, such as wind and solar, either exceeds or falls short of electricity demand.

Ember explainer and infographic on clean flexibility

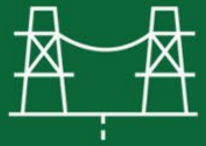
If renewable generation is higher than electricity demand...



If renewable generation is lower than electricity demand...



"Smart Electrification" Action Plan



The "Future Grids" Task Force

Joint DG ENER-DG AGRI "Strategy for Agri-PV"

EU as a Global Leader in Open Energy Data and Modelling

The good

EU has many good policies and initiatives on open data

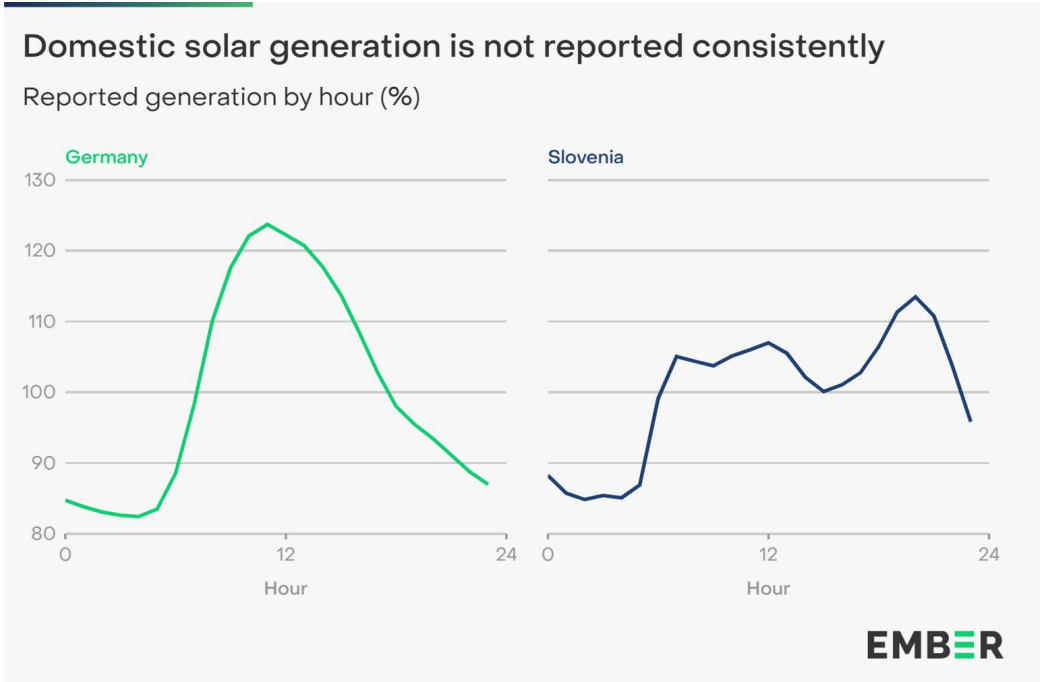
- Open Data Directive
- Transparency platforms
  - ENTSOe
  - Common European Energy Data Space

Data challenges

But there are many data challenges and areas for improvement:

- Quality and consistency
- Availability
- How open

Consistency



Availability

Some important data is either not available, or not available consistently

- No systematic asset registration scheme
  - Batteries,
  - EV chargers,
  - Heat pumps

Open

Some data is available but in formats which limit data exchange

- National Energy & Climate Plans
- Grid plans
- Mainly pdfs
- Limited interoperability
- Often proprietary models

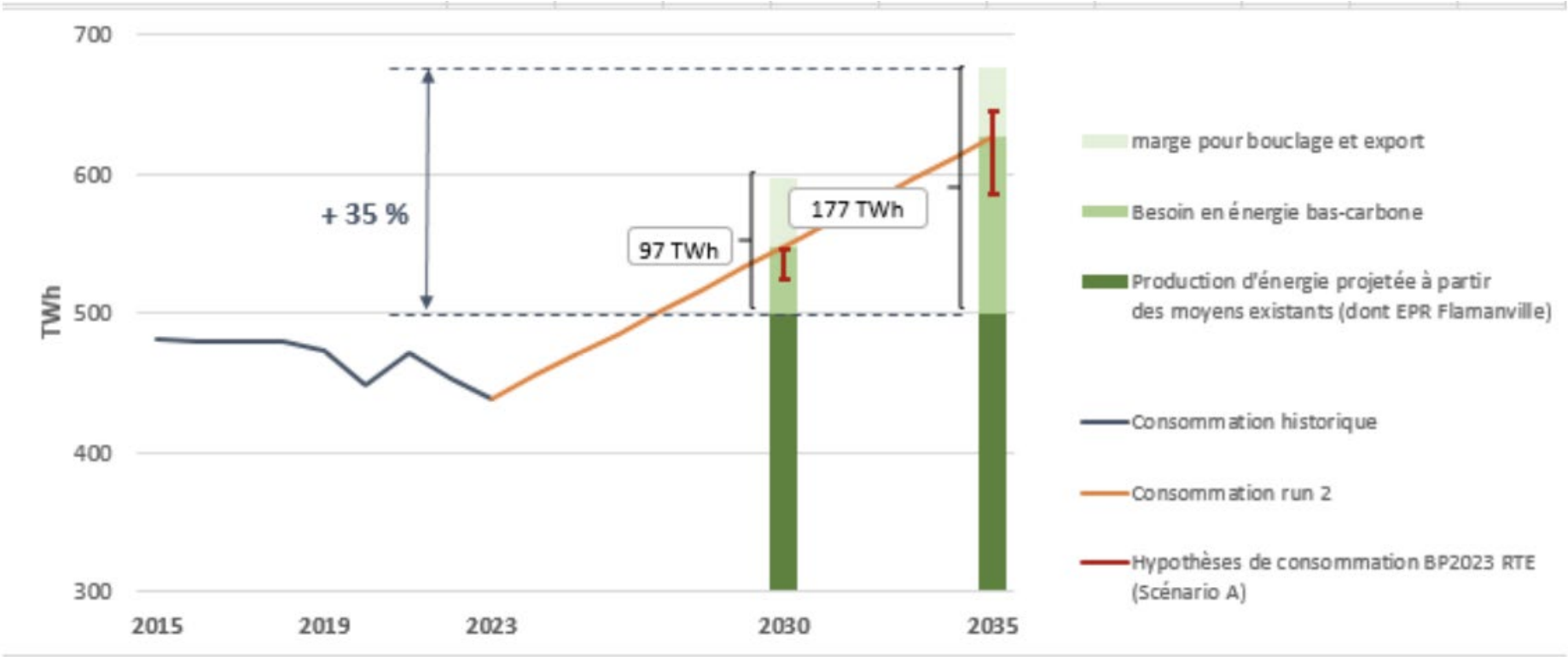


Figure26: Projected electricity consumption at 2030 and 2035 (Source: SGPE/DGEC modelling)

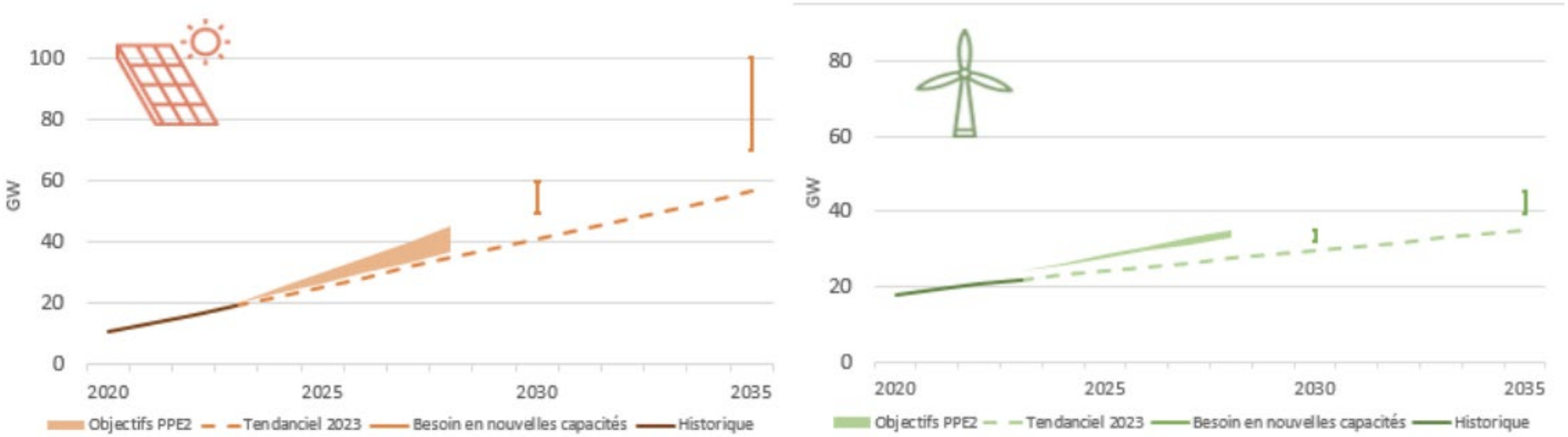
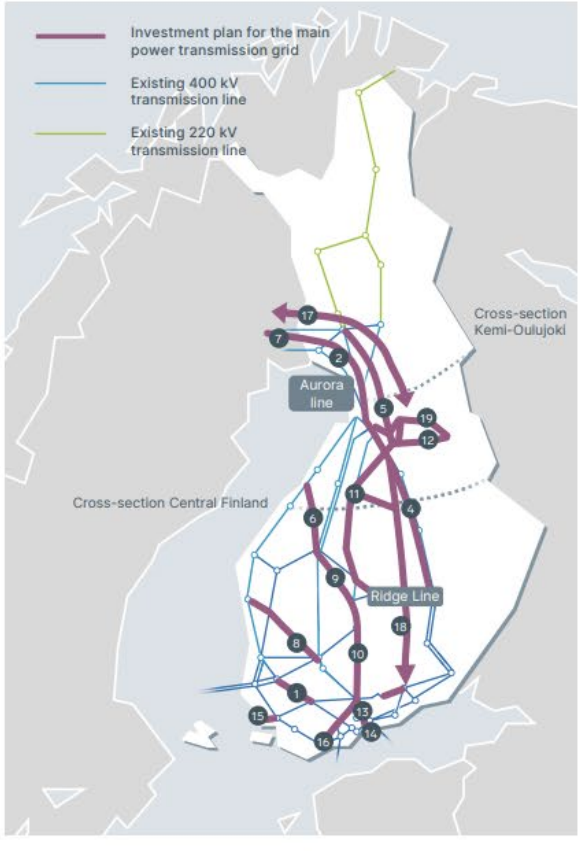


Figure28: Onshore renewable energy development trajectory in GW (Source: DGEC Models)



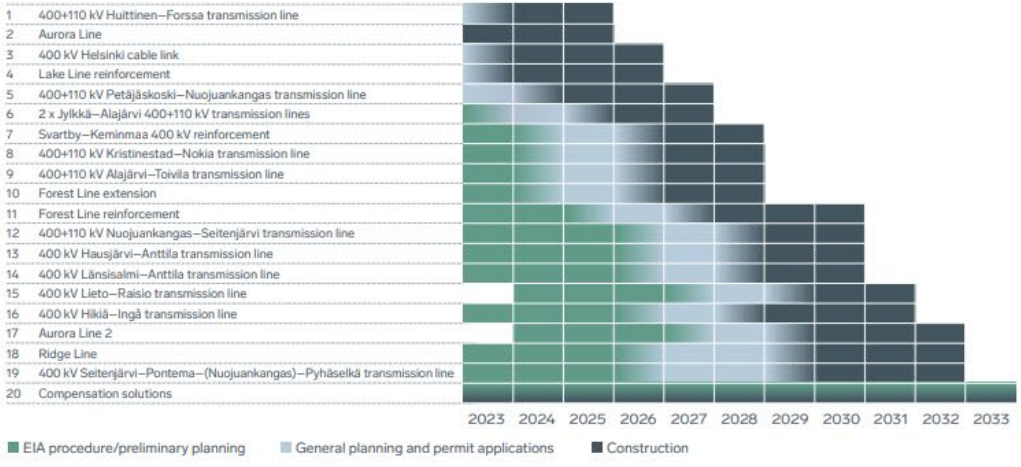
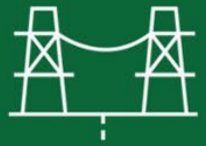


Figure 2. Main grid development plan with respect to the main transmission grid. The new 400 kV connections are shown in red.

"Smart Electrification" Action Plan



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Joint DG ENER-DG AGRI "Strategy for Agri-PV"

EU as a Global Leader in Open Energy Data and Modelling

Improve data transparency

Open data facilitates business innovation, increases confidence in the solutions, allows better grid and system planning

- Coordinated approach across the EU to **asset registration** for granular and timely visibility of renewable, storage and flexibility assets
- Prompt availability of open, granular **data on the status of the grid** (interoperability is key)

EU as a Global Leader in Open Energy Data & Modelling

Transparent data is crucial →
Initiate transition to open energy data and modelling

- EU data platforms disclose additional data in a more timely manner, and implement open data standards
- Coordinated approach across the EU to asset registration for visibility of renewable and flexibility assets
- Commission makes NECP and IA data available in a consistent and regular manner
- Roadmap from proprietary energy system models to open source models

Electrification Action Plan needs to be “smart”

Clean flexibility & electrification must go hand in hand: “SMART from the start & SMART as standard”

- **Opportunities:** more homegrown energy sources, lower energy costs, investment de-risking, optimised grid enhancement
- **Urgency:** action on flexibility is needed now - Electrification Action Plan a crucial moment

Thoughts / opportunities

- AI could help
  - e.g. automated asset registration

- Meteorology & climate is a good example:
  - Data sharing between public and private orgs
  - Commitment to standards
  - National and international cooperation
  - Clear governing bodies

Summary

- EU clean energy transition is well underway
- Clean, flexible power system requires open data
- EU is an advocate on open data
- Many challenges and opportunities
- Ember's recommendations

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Thank you

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